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(54) Title

QUICK-LOCKING HITCH FOR CHANGING EXCAVATOR BUCKET

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(56) Prior Art Documents

AU 613025 14782/88 E02F 3/96

AU 62019/86 E02F 3/96

AU 36627/84 E02F 3/96

(57)

A manually-operable, quick-locking, safety hitch for interchangeable attachment of an excavating bucket to an excavator boom, has a body with two side walls (10,11) joined by a base plate (12) to house a slide (17) which is designed to be moved along fixed internal guides (19, 20) an upper part (10a,10b) of each wall has two pairs of laterally aligned boom pin attachment holes (13,13a, 14,14a) and a lower part has a pair of side slots (15) and bottom slots (16) for attachment of bucket attachment pins: the bottom slots are closable by slide hook members (21,21a,21b) which releasably lock a bucket-attachment pin into the slide (17) by manual rotation of a threaded end of a bolt (22) in a captive nut (23) on the slide (17); the bolt head is retained in the slide by an end plate (24) and one end of the slide projects through a hole in the end plate (24) and the slide (17) can then be doubly locked in the body of the

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hitch by passing a linch pin (25) through a hole in the projecting end of the slide.

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PATENT REQUEST: PETTY PATENT

1/ We, being the person(s) identified below as the Applicant, request the grant of a patent to the person identified below as the Nominated Person, for an invention described in the accompanying Petty complete specification.
Full application details follow.

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[70] Nominated Person T & K ENGINEERING PTY.LTD.

Address as above

[54] Invention Title QUICK-LOCKING HITCH FOR EXCAVATOR IMPLEMENT

[72] Name(s) of actual inventor(s) MATHEUS VAN UYEN Managing Director of Applicant
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ASSOCIATED PROVISIONAL APPLICATION(S) DETAILS

[60] Application Number(s) and Date(s)

BASIC CONVENTION APPLICATION(S) DETAILS

[31] Application Number	[33] Country	Country Code	[32] Date of Application

DIVISIONAL APPLICATION DETAILS

[62] Original application number

TICK IF APPLICABLE

☐ I am an eligible person described in Sections 33 - 36 of the Act.

Drawing number recommended to accompany the abstract

T & K ENGINEERING PTY.LTD. By Our Patent Attorneys, JOHN L. DAVIES & CO.

(Signature)

13th November, 1992
(Date)

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NOTICE OF ENTITLEMENT

(To be filed before acceptance)

I/We, T & K ENGINEERING PTY.LTD. a Victorian Company A.C.N.052296170
of 2/8 Enterprise Avenue, Berwick, Victoria, Australia

being the applicant in respect of Application No., state the following:-

Part 1 - Must be completed FOR ALL APPLICATIONS.

The person(s) nominated for the grant of the patent: has entitlement from the actual Inventor;

the Actual Inventor is the managing Director of Applicant Company and has vested his right, title and interest in the Invention and the right to apply for a patent in the Applicant Company

(eg by assignment, by mesne assignment, as legal representative of, etc)

Part 2 - Must be completed IF THE APPLICATION IS ASSOCIATED with one or more PROVISIONAL APPLICATIONS.

The person (s) nominated for the grant of the patent:

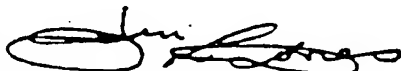
*is / *are the applicant(s) of the provisional application(s) listed on the patent request form

or

has entitlement to make a request under Section 113 in relation to the provisional application(s) listed on the patent request form

(eg by assignment, by agreement, etc)

T & K ENGINEERING PTY.LTD. BY Our Patent Attorney JOHN L.DAVIES & CO.



(Signature)

17th November, 1992

(Date)

(If the applicant is a Company or other legal entity, also indicate the name and standing of the authorized signatory.)

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Note: Use form P/00/008b where details for PCT, convention priority, microorganism deposit, additional or divisional application, are required.

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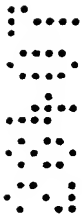
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**ORIGINAL
COMPLETE SPECIFICATION
PETTY PATENT**

Invention Title: QUICK-LOCKING HITCH FOR EXCAVATOR IMPLEMENT

The following statement is a full description of this invention, including the best method of performing it known to me:-



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- 1 -

This invention relates generally to earth-moving machines and relates in particular to a manually operable safety and quick-locking hitch for use with links between attachment and tilting pins of an assembled excavator bucket and arm.

5 According to the invention there is provided a manually-operable, safety and quick-locking hitch for use when interchanging buckets via boom and bucket attachment pins of an assembled excavator bucket and arm, the hitch comprising a body having a pair of laterally-spaced, plate-like side walls with laterally aligned boom attachment pin holes extending therethrough and laterally-aligned bucket attachment and locking pin slots opening into respective edges of the side walls, a bucket pin locking slide mounted within the body for movement along a longitudinal axis with respect to and between the side walls of the body, the slide being provided with integral bucket pin engaging and locking hook members adapted to be moved to and fro with the slide between a locking position closing said bucket pin locking slots and engaging and locking a bucket locking pin within the bucket pin locking slots and an unlocking position to open the bucket pin locking slots and enable the bucket-locking and attachment pins to be released from the body and the hitch, the slide being movable by rotation of a bolt with an externally threaded portion mounted within an internally-threaded member fixed to the slide or an internally-threaded portion of the slide, and wherein external additional locking means such as a linch pin placed in a hole of an externally-projecting portion of the slide, are provided to lock and unlock the

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bucket locking pin slide with respect to an end plate adapted to bear against the ends of the side walls of the hitch.

5 Preferably the body has a pair of spaced plate-like side walls with two pairs of laterally-aligned boom attachment pin holes, a lower side wall portion having a pair of side-entry bucket attachment pin slots and a pair of bottom-entry bucket locking pin slots, the internally-threaded member being a captive nut fixed to the slide.



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mounted within the body for longitudinal movement between the side walls and which is adapted to be moved to and fro between a retracted or inward position so that the pin-locking hooks engage a bucket attachment pin placed within the bucket pin vertical retaining slots and to retain the pin within the vertical slots and the hitch and an extended or outer position to open the vertical slots and release the pin from the hitch, the slide being movable by manually rotating a bolt with an externally threaded portion rotatably mounted within an internally-threaded member such as a captive nut fixed to the slide or within an internally threaded portion of the slide.

Preferably, further and external locking means such as a linch pin adapted to be placed in a hole of an externally-projecting portion of the slide, are provided to lock and unlock the bucket rear pin retaining slide with respect to an end plate adapted to bear against the ends of side walls of the body of the hitch.

A non-limiting example of an embodiment or practical arrangement of the invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a vertical sectional view of the hitch body with slide removed.

Figure 2 is a rear end view.

Figure 3 is a vertical sectional assembly view.

Figure 4 is a side elevation of the slide.

Figure 5 is an inverted plan view of the

assembly of Figure 3.

Figure 6 is a plan view of the slide

Figure 7 is an end view of the slide

Figure 8 is an end view of the assembled hitch
5 locked with locking pin.

Referring to the drawings, there is shown a
manually-operable, safety and quick-locking hitch for
use with attachment and tilting links of an assembled
excavator bucket and arm, the hitch has a body formed by
10 a pair of spaced side walls 10, 11 of steel plate
rigidly connected by a lateral base plate to form a
slide cavity. Each side wall preferably has formed
therein two pairs of laterally-aligned, pin-receiving
holes and three laterally-aligned, pin-receiving slots
15 labelled hereinafter. The upper portion 10a, 11a of
each side wall 10, 11, has two pairs of aligned
cylindrical holes surrounded by circumferential bearing
sleeves for placement therethrough of an excavator boom
attachment pins (not shown) - these holes comprise boom
20 attachment front pin receiving holes 13, 13a and boom
attachment rear pin receiving holes 14, 14a. There is
also formed within a lower portion of the side walls of
the hitch body, two pairs of lower pin-receiving, half-
moon slots comprising a side entry slot 15 opening into
25 an edge of one or front end of the lower wall portions
of the side walls of the hitch body and which comprise a
bucket front attachment pin holder and a pair of bottom
entry slots 16, 16a opening into lower edges and for
holding a bucket attachment rear pin. Within the cavity

between the lower portion of the side walls 10, 11, there is preferably and removably mounted a pin retaining slide 17 formed of twin slide plates of steel joined by a top plate 18 adapted to slide upon fixed internal guides 19, 20, for movement within and along the lower portions of the side walls 10, 11 of the hitch body. The slide 17 has a plurality of identical hook-like bucket pin-locking members 21, 21a, 21b formed thereon and the slide is adapted to be moved to and fro between a retracted or inward position to open bottom entry pin-receiving slots 16, 16a and an outer or extended position to close these slots to lock the bucket pin into the hitch. The slide 17 is movable by hand rotation of a bolt 22 with an externally threaded portion mounted within a fixed internally-threaded member such as the captive hexagonal nut 23. The shaft of the bolt passes through a hole formed or drilled in the end plate 24 of hitch so that the head of the bolt 22 is retained behind the end plate 24. The pin-retaining slide 17 is further lockable onto and unlockable with respect to the bucket rear attachment pin of the hitch by means of a linch pin 25 placed in a hole formed in the projecting end portion of the slide the end portion of which is adapted to project through a transverse slot in the end plate 24 which can be either a separate loose plate or can be welded to the end edges of each side wall of the hitch.

The claims defining the invention are as follows:

1. A manually-operable, safety and quick-locking hitch for use when
interchanging buckets via boom and bucket attachment pins of an assembled
excavator bucket and arm, the hitch comprising a body having a pair of laterally-
5 spaced, plate-like side walls with laterally aligned boom attachment pin holes
extending therethrough and laterally-aligned bucket attachment and locking pin
slots opening into respective edges of the side walls, a bucket pin locking slide
mounted within the body for movement along a longitudinal axis with respect to
and between the side walls of the body, the slide being provided with integral
10 bucket pin engaging and locking hook members adapted to be moved to and fro
with the slide between a locking position closing said bucket pin locking slots and
engaging and locking a bucket locking pin within the bucket pin locking slots and
an unlocking position to open the slots and enable the bucket-locking and
attachment pins to be released from the body and the hitch, the slide being
15 movable by rotation of a bolt with an externally threaded portion mounted within
an internally-threaded member fixed to the slide or an internally-threaded portion
of the slide, and wherein external additional locking means such as a linch pin
placed in a hole of an externally-projecting portion of the slide, are provided to
lock and unlock the bucket locking pin slide with respect to an end plate adapted
20 to bear against the ends of the side walls of the hitch.

2. The hitch according to claim 1 wherein the pair of laterally-spaced plate-
like side walls are provided with two pairs of laterally-aligned boom attachment



pin holes and the lower portions of the side wall are provided with a pair of side-entry bucket attachment pin slots and a pair of bottom-entry bucket locking pin slots, the internally-threaded member being a captive nut fixed to the slide.

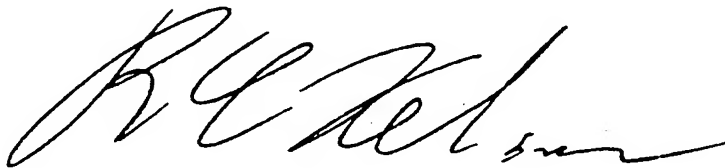
3. A hitch substantially as described herein with reference to any one or
5 more of the drawings.

D A T E D this 12th day of April, 1994.

T & K ENGINEERING PTY LTD

By their Patent Attorneys:

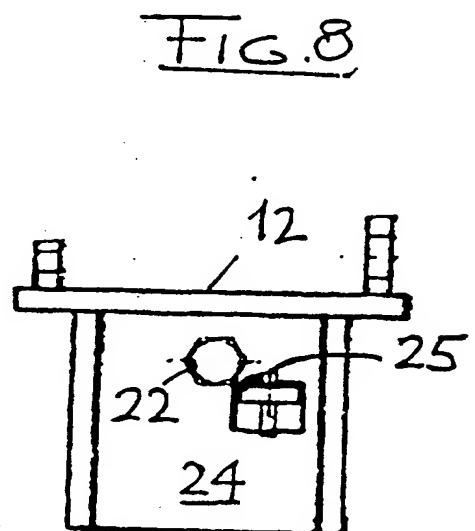
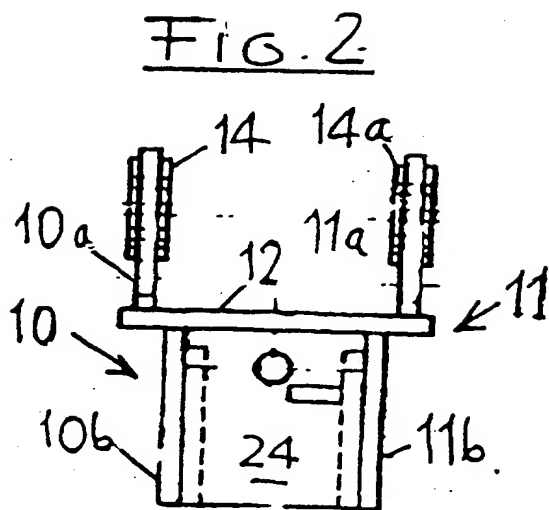
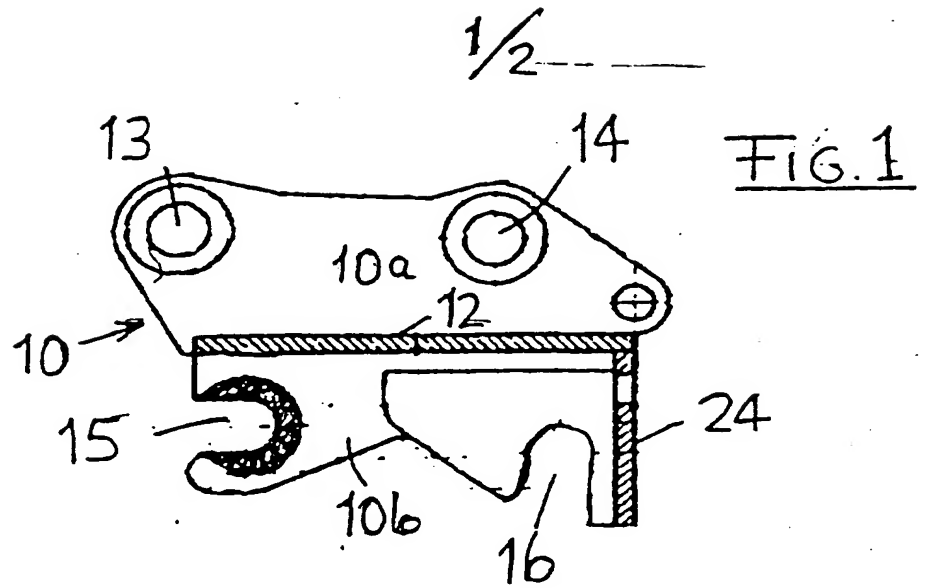
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ABSTRACT:

A manually-operable, quick-locking, safety hitch for interchangeable attachment of an excavating bucket to an excavator boom, has a body with two side walls (10,11) joined by a base plate (12) to house a slide (17) which is designed to be moved along fixed internal guides (19,20) an upper part (10a,10b) of each wall has two pairs of laterally aligned boom pin attachment holes (13,13a,14,14a) and a lower part has a pair of side slots (15) and bottom slots (16) for attachment of bucket attachment pins; the bottom slots are closable by slide hook members (21,21a,21b) which releasably lock a bucket-attachment pin into the slide (17) by manual rotation of a threaded end of a bolt (22) in a captive nut (23) on the slide (17); the bolt head is retained in the slide by an end plate (24) and one end of the slide projects through a hole in the end plate (24) and the slide (17) can then be doubly locked in the body of the hitch by passing a linch pin (25) through a hole in the projecting end of the slide.



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FIG. 3

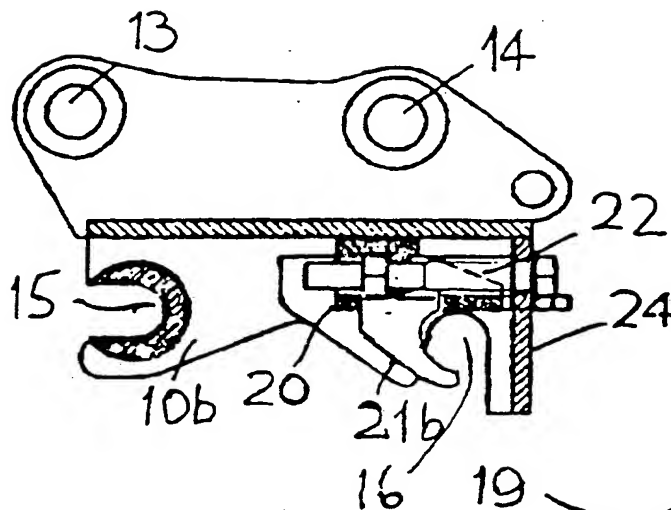


FIG. 5

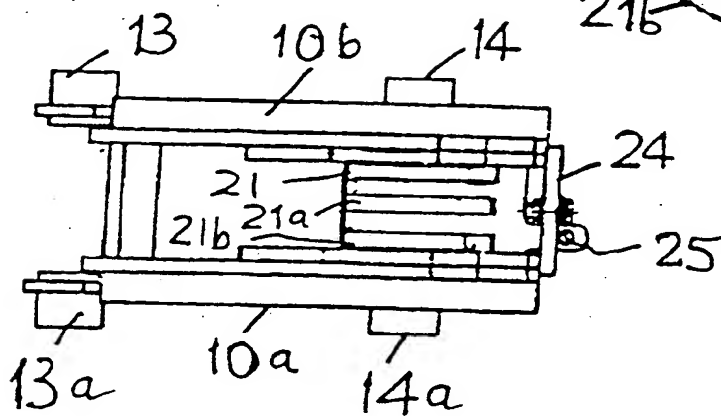
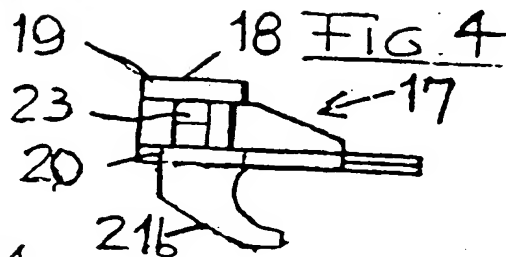


FIG. 6

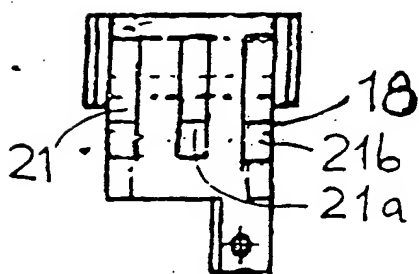
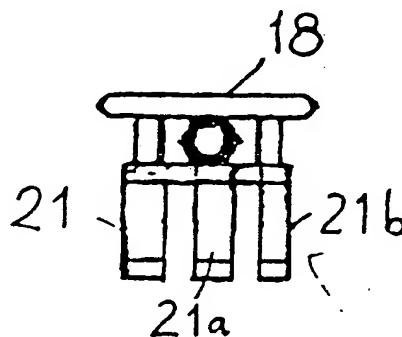


FIG. 7



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